(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
17 July 2008 (17.07.2008)

PCT

(10) International Publication Number
WO 2008/083636 A1

(51) International Patent Classification:
B64C 39/00 (2006.01) *F03H 5/00* (2006.01)

(21) International Application Number:
PCT/CZ2008/000007

(22) International Filing Date: 10 January 2008 (10.01.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
PV 2007-30 11 January 2007 (11.01.2007) CZ

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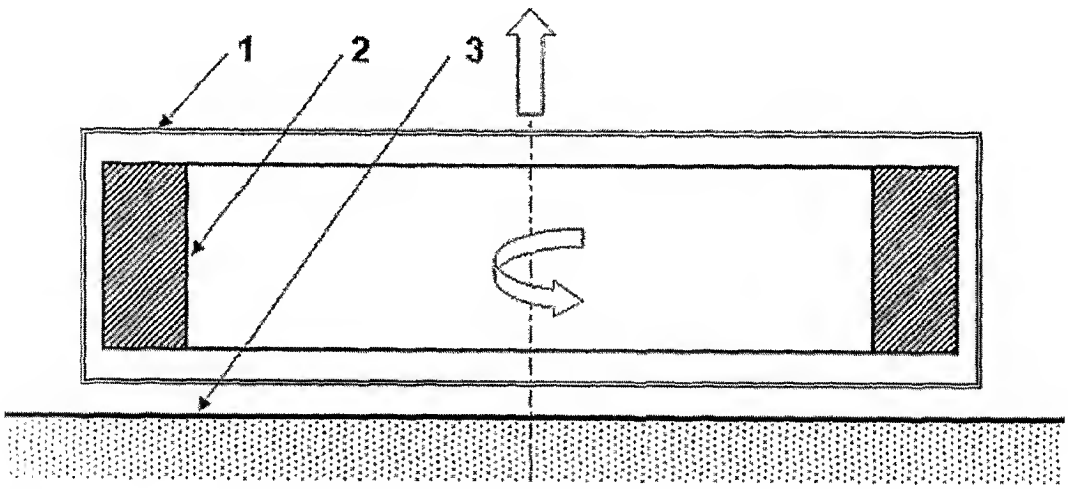
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(54) **Title:** FLYING DEVICE



(57) **Abstract:** The invention relates a flying device with at least one propulsion unit in an oval body shape, which that the propulsion unit consists of a closed chamber (1), with gas in this space with lower pressure than the air pressure, containing a rotor (12) with the peripheral velocity in the plane parallel to the Earth surface (3) of more than 7.9 kmps.

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Flying device

TECHNICAL FIELD

The technical solution pertains a flying device equipped with at least one propulsive unit, in the form of an oval body with at least one rotation axis.

BACKGROUND OF THE INVENTION

The existing means of transport, such as airships, airplanes, helicopters, rockets and so on, need atmosphere or rocket propulsion to be airborne. One disadvantage of the devices using other principles than the rocket one to take off is their use only in environment with sufficient atmospheric air pressure. On the other hand, rocket engines are very uneconomic and single-purpose, which substantially limits their use in the commercial area.

There have been devices patented, similar to flying saucers, for instance the following solutions.

Patent WO 85 03053 is a device of rotational shape using rotating rim. Reasons cited in the patent and explaining the origin of vertical force are not described sufficiently. Besides, some other flaws of the described design are obvious, preventing it from floating. One of the most important flaws is the failure to give the minimum peripheral velocity. In this case, the rotor spins in the air and this environment prevents reaching high peripheral velocity which would be able to support the device. Moreover, the elimination of rotary moment produced by the rim rotation is not explained.

With patent FR 2 759 344, a rotating propeller is needed for propulsion. Two rims rotating against each other ensure stability but propulsion is provided by a propeller and the rims serve as protection from micrometeorites.

Patent US 2005029397 is a flying saucer in the form of sphere, based on the principle of action and reaction, i.e. on the rocket propulsion principle. However, instead of hot, fast-flowing gas, the device uses light generated by electric discharge in the sphere. The flying saucer control is carried out through reflecting light by a mirror.

SUMMARY OF THE INVENTION

The above-mentioned flaws are, to substantial degree, eliminated by a flying device equipped with at least one propulsion unit in the form of an oval body, as seen from the technical solution. The key element of the propulsion unit is a closed vacuum chamber containing a rotor with peripheral velocity, in the plane parallel with the Earth surface, of more than 7.9 kilometers per second.

The propulsion unit can be formed by at least two rotors with opposite rotation directions and parallel axes, placed besides each other, or by at least two rotors with opposite rotation directions, placed one above the other on their common axis.

The rotor can be placed in rotating magnetic field, or it can be connected to a rotating axis shaft.

The rotor can be made of an elastic rim of solid material, loose material or liquid.

If the flying device is equipped with one propulsion unit, it is helpful to equip it with at least one more rotor to eliminate moment from the propulsion unit.

The propulsion unit consists of a rotating rim with the peripheral velocity of more than 7.9 kmps, with the rotating rim placed in a vacuum chamber with strong rotating magnetic field. Vacuum eliminates friction between the rim and its environment.

Points on the rotor – the rim whose rotation plane is parallel to the Earth surface – must have their peripheral velocity on the Earth surface higher than 7.9 kmps, which is the Earth escape velocity. Then these points are subject to a vertical centrifugal force which supports them similarly to a point flying round the Earth at the Earth escape velocity. With accelerating revolutions, more points reach the Earth escape velocity and the resulting vertical force exceeds not only the weight of the rotor but of the whole device. The device floats above the Earth or other surface.

The flying device can move in the atmosphere or beyond it, also vertically. Its operation is very economic. It needs energy mainly for accelerating the rotor and horizontal movement. It does not need any special starting pads and can start from any place.

Externally, the propulsion unit is a closed chamber which can be installed in a bunch of two or more units into a flying device and increase the loading capacity of the whole device. The flying device itself supports the load with these units. There is no propeller outside the flying device so the device can land safely even on places that are not accessible for helicopters, such as dense forest, built-up area and so on.

When flying into cosmic space, the device first takes off outside the atmosphere, using a fraction of energy in comparison with rocket propulsion, and then its rocket motors give it the Earth escape velocity. Spinning up of the rim can be done on the Earth using external sources, which would save energy of the device. When taking off, the device will use its own energy to accelerate rotation, keep up revolutions and move horizontally. When returning to the Earth surface, the device will not be slowed down by the air which would raise its surface temperature dangerously. The engines will slow down in the cosmic space to a slow horizontal velocity and bring the device down horizontally to the Earth surface.

One big advantage of the device is that it can float in any height from a few meters to hundreds of kilometers. This is allowed by very low energy consumption to keep up the rim revolutions.

The loading capacity of the device depends on the rim revolutions and weight. If the rim weights e.g. 100 kilograms and the revolutions ensure the peripheral velocity of e.g. 16 kmps, which is double the desired velocity, the loading capacity is 400 kilograms. If we need more capacity, we must increase revolutions, weight or the rim dimension, or install more propulsion units in a bunch.

Rotary moment, induced by the rotating rim, can be eliminated by two rotors with opposite rotation directions, whose axes are parallel and besides each other, by two rotors with opposite rotation directions, placed one above the other on their common axis, or by at least one rotor to eliminate this moment from the propulsion unit.

The rotor need not be made of solid material; it can consist of an elastic rim as a whole or loose material or liquid.

BRIEF DESCRIPTION OF THE DRAWINGS

The flying device with the propulsion unit according to this technical solution will be described in more detail on particular examples of design with the help of enclosed drawings with drawing 1 being the draft of basic design. Drawing 2 shows the front view of the design with the rotating rim in toroidal cylinder, supported and spun by magnetic field. Drawing 3 is the three-dimensional picture of the flying device with propulsion units on the common axis. Drawing 4 is the three-dimensional picture of the flying device with propulsion units besides each other.

DETAILED DESCRIPTION OF THE PREFERED EMBODIMENT

In the exemplary flying device 4 (Picture 2), the propulsion unit consists of the rim-shaped rotor 2 with the peripheral velocity of more than 7.9 kmps, with the rotating rim 2 placed in the vacuum chamber 1 with strong rotating magnetic field.

In another design (Picture 4), the propulsion unit consists of two rotating rims 2, with opposite rotation directions, placed besides each other, with their axes being parallel. These units are placed in the flying device itself 4, with the cockpit and propulsion unit 5 for horizontal movement.

In still another design (Picture 3), the propulsion unit consists of two rotating rims 2, with opposite rotation directions, placed one above the other on their common axis. These units are placed in the flying device itself 4, with the cockpit and auxiliary propulsion unit 5 for horizontal movement.

The propulsion unit (Picture 2) for vertical floating contains the vacuum chamber 1 of an oval toroidal shape, in which the rim-shaped rotor 2 is placed. In this chamber 1, strong rotating magnetic field is induced, which supports the rim 2 and spins it at the same time. If the peripheral velocity of the rim 2 on the Earth surface 3 is sufficient, more than 7.9 kmps, the vertical lifting force is stronger than the weight of the flying device 4.

These units can work in a bunch of either two propulsion units in line (Picture 4) or two units with rims 2 with opposite rotation directions and common rotation axis. This also ensures the stability of the flying device 4 against axial spinning. The solution with rims 2 with opposite rotation directions (Picture 3) allows controlling the spin of the flying device 4 around its vertical axis.

Movement and steering in the horizontal plane are carried out through traditional propeller, jet or rocket auxiliary propulsion units 5 (Picture 3 and 4).

The vacuum chamber 1 eliminates friction between the rotating rim 2 and its environment. Rotating magnetic field spins the rim 2 up to desired revolutions and ensures that there will not be any contact with the chamber 1.

The rim 2 can be solid, then it is subject to centrifugal force, or elastic. In this case, the chamber 1 is also subject to centrifugal force, through magnetic field.

Propulsion units (at least two of them) form a bunch supporting the load. For lighter loads, a bunch of two smaller units with opposite rotation directions 2, placed beside each other or one above the other, is enough. For heavier loads, the rim 2 diameter must be increased or there must be more propulsion units.

With the rim 2 weight e.g. 100 kilograms and revolutions ensuring the peripheral velocity of e.g. 16 kmps, the loading capacity is 400 kilograms. If we need more capacity, we must increase revolutions, weight or the rim 2 dimension or install more propulsion units in a bunch.

The diameter of the rim 2 can be from decimeters to several meters. This diameter determines the dimension of the flying device 4, which can be similar to dimensions of helicopters without moving rotor.

Horizontal velocity will be determined by the used propulsion units. For movement in the atmosphere, this can be supersonic velocity; for movement in cosmic space, it will be more than the Earth escape velocity. One big advantage of this flying device 4 is that it can slow down from these velocities easily to zero velocity and float in the space.

Vertical steering is carried out by changing revolutions of the rim 2. Rotating round the vertical axis is carried out by changing mutual revolutions of rims 2, by turning propulsion units for horizontal movement or by wings with rudders for higher horizontal velocities.

INDUSTRIAL UTILIZATION

The flying device according to this technical solution will be used mainly in the rocket transportation and aviation.

CLAIMS

1. A flying device with at least one propulsion unit in an oval body shape, **characterized by the fact** that the propulsion unit consists of a closed chamber (1), with gas in this space with lower pressure than the air pressure, containing a rotor with the peripheral velocity in the plane parallel to the Earth surface of more than 7.9 kmps.
2. A flying device according to Claim 1, **characterized by the fact** that the propulsion units consists of at least two rotors with opposite rotation directions, with parallel axes and placed beside each other.
3. A flying device according to Claim 1, **characterized by the fact** that the propulsion units consists of at least two rotors with opposite rotation directions, placed one above the other on a common axis.
4. A flying devices according to any of Claims 1 to 3, **characterized by the fact** that the rotor is placed in rotating magnetic field.
5. A flying device according to any of the above-mentioned Claims, **characterized by the fact** that the rotor is connected to a rotating axis shaft.
6. A flying device according to any of the above-mentioned Claims, **characterized by the fact** that the rotor is constituted by a solid rim.
7. A flying device according to any of the above-mentioned Claims 1 to 5, **characterized by the fact** that the rotor is constituted by an elastic rim as a whole
8. A flying device according to any of the above-mentioned Claims 1 to 5, **characterized by the fact** that the rotor is constituted by loose material.
9. A flying device according to any of the above-mentioned Claims 1 to 5, **characterized by the fact** that the rotor is constituted by a liquid.
10. A flying device according to any of the above-mentioned Claims, **characterized by the fact** that it is equipped with one propulsion unit and at least one more rotor to eliminate moment from the propulsion unit.

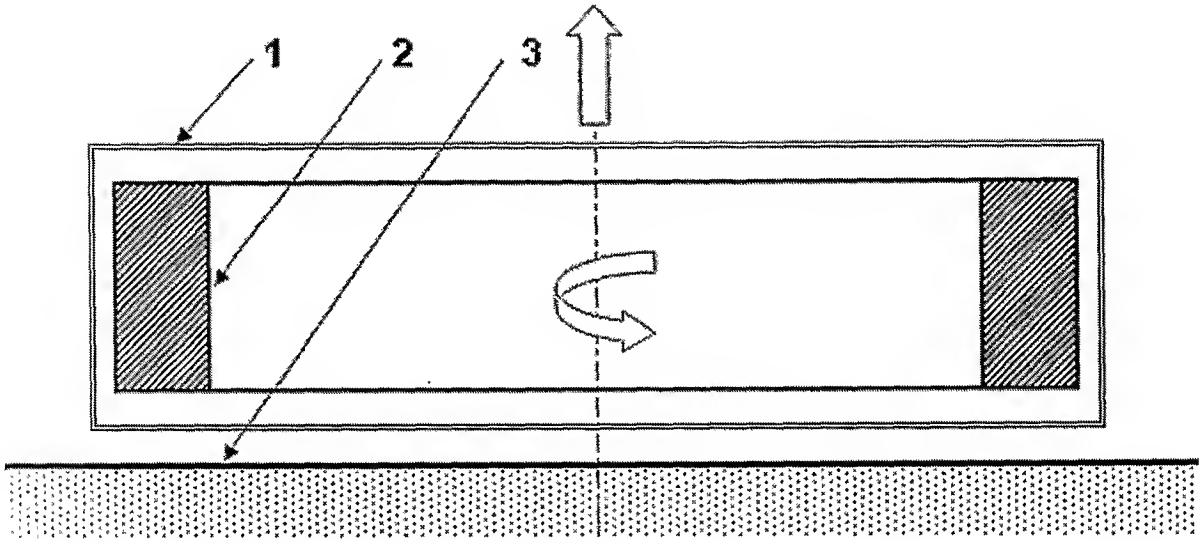

FIG. 1

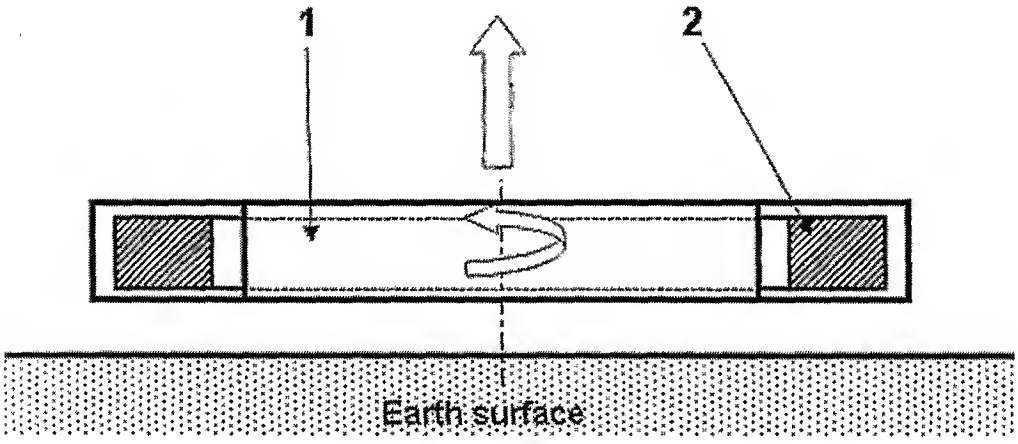

FIG. 2

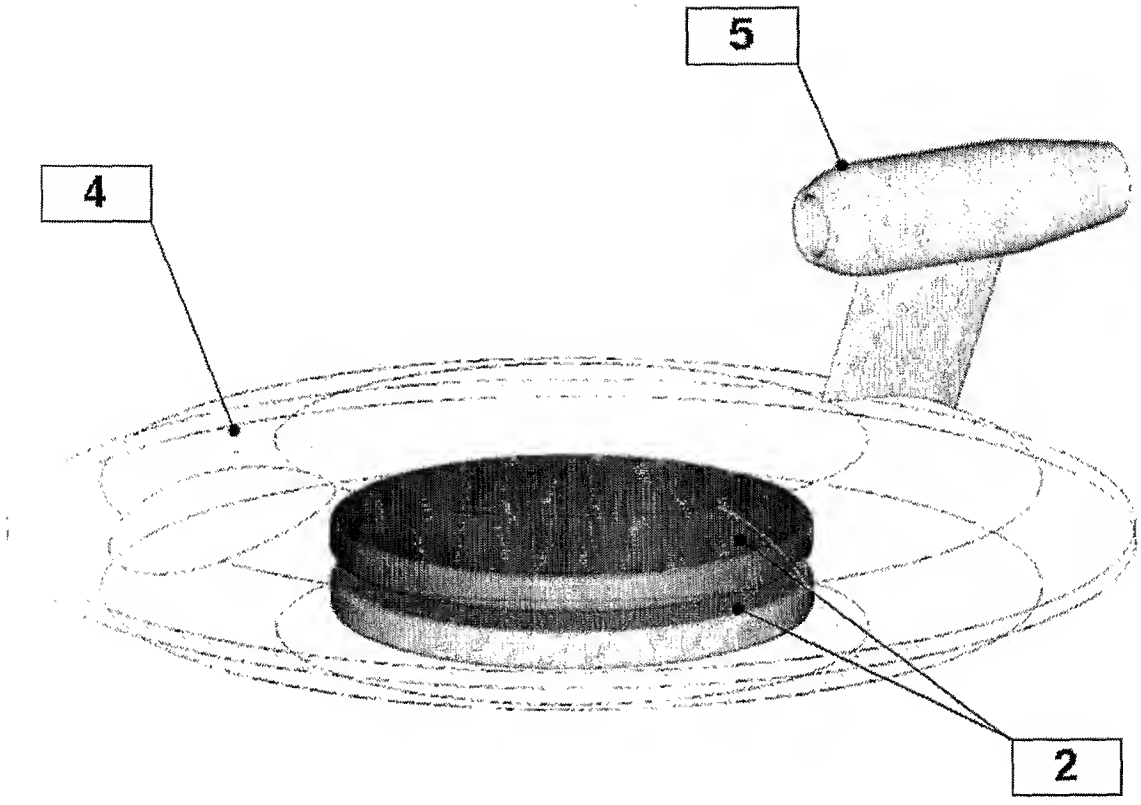

FIG. 3

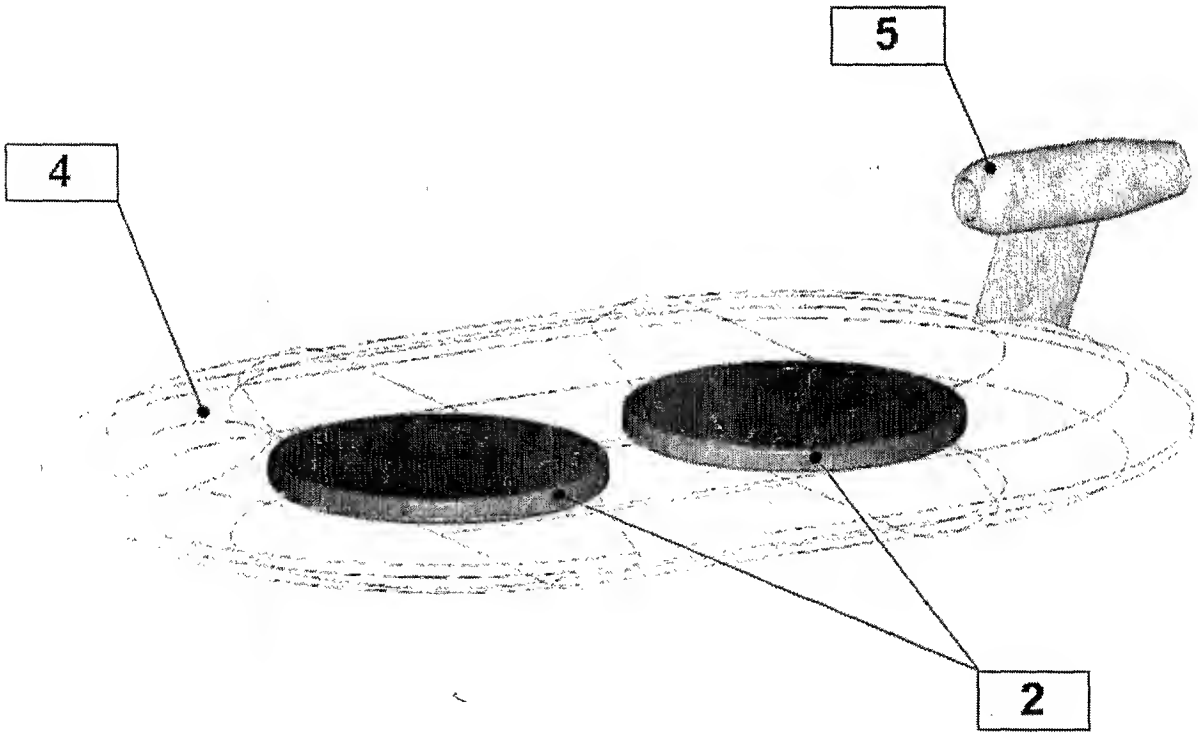

FIG. 4

INTERNATIONAL SEARCH REPORT

International application No
PCT/CZ2008/000007

A. CLASSIFICATION OF SUBJECT MATTER
INV. B64C39/00 F03H5/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B64C F03H B64G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 197 13 613 A1 (KAEHLER KAI [DE]) 8 October 1998 (1998-10-08) the whole document	1-10
X	GB 2 403 699 A (KAY RICHARD [GB]) 12 January 2005 (2005-01-12) the whole document	1,6
A	US 2003/155469 A1 (UGRIN SRECKO [YU]) 21 August 2003 (2003-08-21) the whole document	1-10

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier document but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
14 May 2008	23/05/2008

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Salé, Yoann

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/CZ2008/000007

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 19713613 A1	08-10-1998	NONE	
GB 2403699 A	12-01-2005	NONE	
US 2003155469 A1	21-08-2003	NONE	